

Work Order ID 127272-3

Wednesday, December 17, 2014 7:45:40 AM

127272

Page 1

Item ID: D6021-125 Accept *N900040100* Setup Start *NS1*
 Revision ID: Prelim Stop *NS2*
 Item Name: Crosstube Material - 17-4Ph SS
 Start Date: 4/30/2015 Start Qty: 50.00 *50*
 Required Date: 4/30/2015 Req'd Qty: 50.00 *50*
 Reference: Cust Item ID:
 Customer:

Approvals: Process Plan: CK Date: 12/12/17 Tooling: _____ Date: _____
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____
 Run Start *NR1*
 Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
100	PURCHASING	0.00							
100									
Purchasing	Memo	0.00							
Purchasing	Issue P/O: <u>24911</u> Description: 17-4PH H1100 seamless Stainless steel Tube, per ASTM A564 2.378"OD X2.00" ID X125" Long) Min. Ultimate Tensile Strength=140ksi Min. Yield Tensile Strength = 115ksi Tolerance on all dimensions are as per Dwg D6021 Rev. PA1 and ASTM A519 Possible Supplier: Siderval Material certification required								
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
110									
Packaging	Memo	0.00							
Packaging	Ensure material certification is attached								

CK 12/12/17 50

16x 8015-04-27

Work Order ID 127272

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Wednesday, December 17, 2014 7:45:40 AM

Item ID: D6021-125 Accept *N900040100* Setup Start *NS1*
 Revision ID: Prelim Stop *NS2*
 Item Name: Crosstube Material - 17-4Ph SS
 Start Date: 4/30/2015 Start Qty: 50.00 *50* Cust Item ID:
 Required Date: 4/30/2015 Req'd Qty: 50.00 *50* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC6- Inspect dimensions to drawing	0.00							
120									
QC	Memo	0.00							DAS 9 9-89
Quality Control									
130	Identify as per dwg & Stock Location: <u>Hall</u>	0.00							
130									
Packaging	Memo	0.00							16-05-16
Packaging									16-05-16
140	QC21- Final Inspection - Work Order Release	0.00							
140									
QC	Memo	0.00							16-05-16
Quality Control									16-05-16

POSITIVE RECALL

EFFECTIVE

AUTH

RELEASED

DAS

9

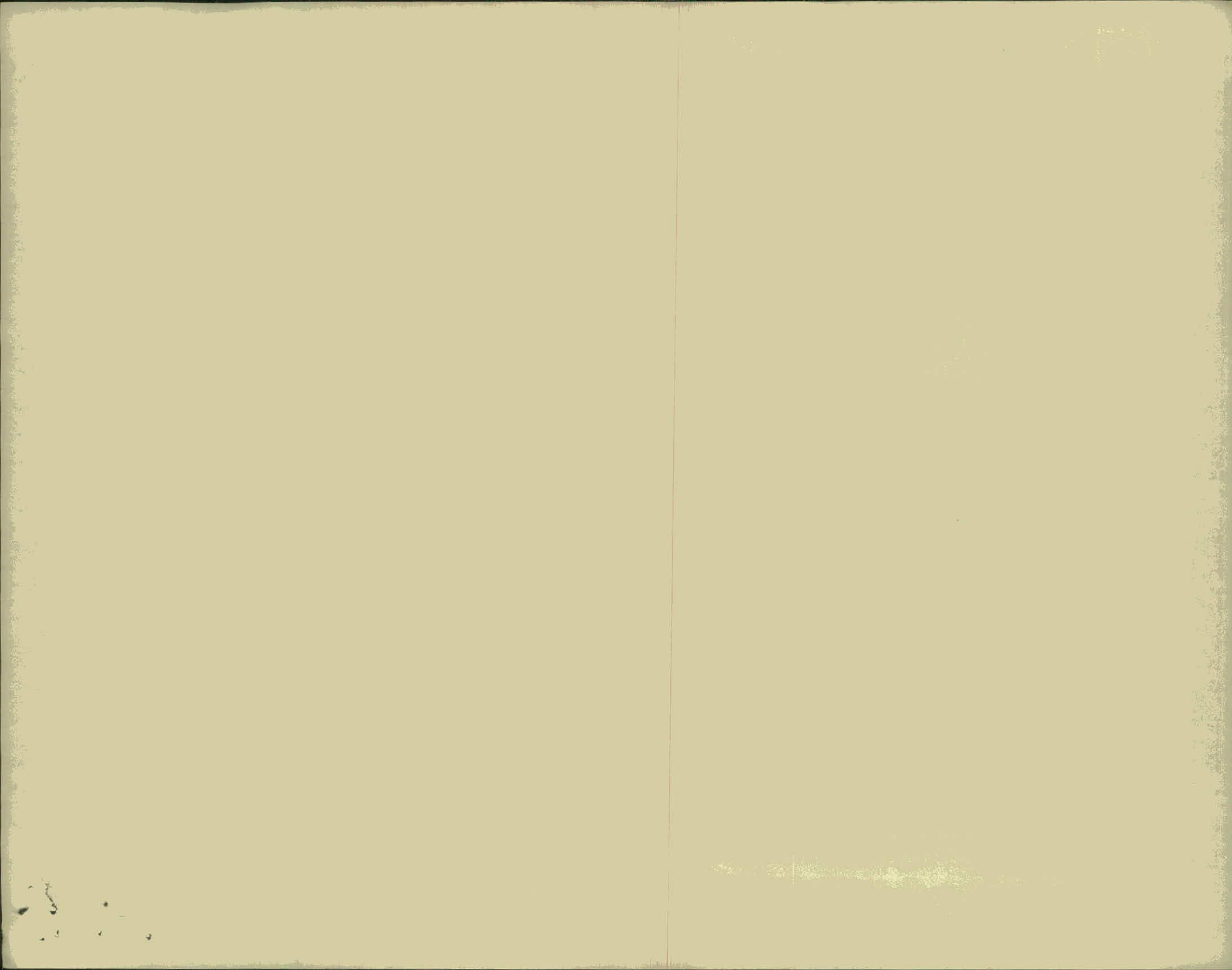
9-89

DATE

16-05-12

for A

W 1605.14



Picklist Print

Wednesday, December 17, 2014 7:45:40 AM

Page 1

Work Order ID: 127272

127272

Parent Item: D6021-125

D6021-125

Parent Item Name: Crosstube Material - 17-4Ph SS

Start Date: 4/30/2015

Required Date: 4/30/2015

Start Qty: 50.00

Required Qty: 50.00

Comments: new issue - prelim LL 12.05.04

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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D6021-125P

Purchased

No

Each

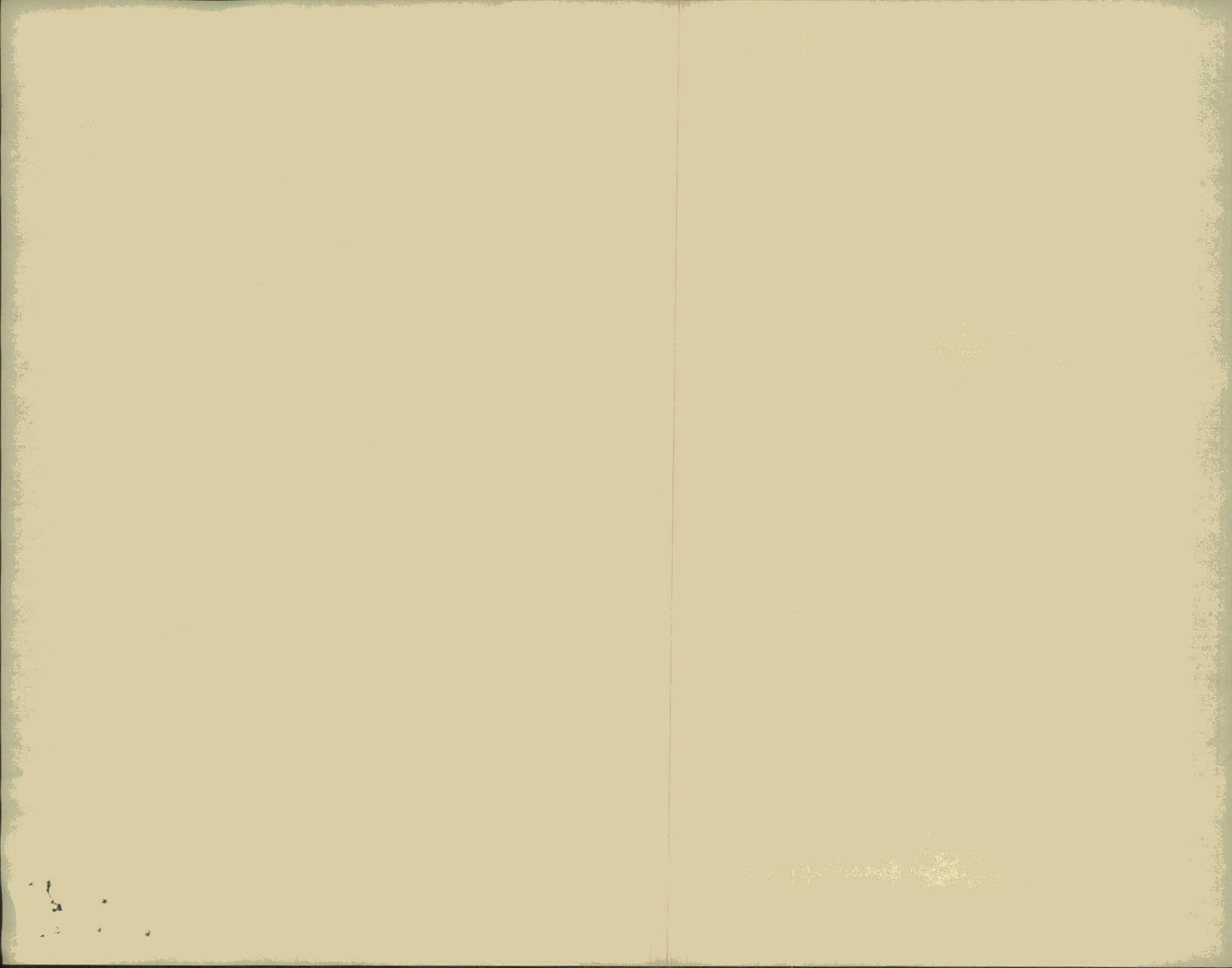
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D6021-125P

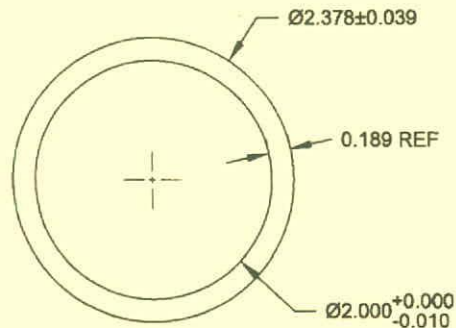
Crosstube Material - 17-4PH

**

50 ~~22x~~
16x 8015-01-27



SPECIFICATION CONTROL DRAWING



NOTES

1) D6021-XXX CROSSTUBE

LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 125" LONG TUBE: D6021-125

2) MATERIAL: 17-4PH SEAMLESS STAINLESS STEEL TUBE PER ASTM A564
Ø2.378 O.D. x Ø2.000 I.D.

HEAT TREAT TO H1025:
MIN. ULTIMATE TENSILE STRENGTH = 155 ksi
MIN. YIELD TENSILE STRENGTH = 145 ksi

3) TOLERANCES ARE AS FOLLOWS:
ECCENTRICITY: 10% (+/-0.018" WALL)
LENGTH: XXX +0.188"/-0.000"
STRAIGHTNESS: 0.012" DEVIATION / 12" LENGTH

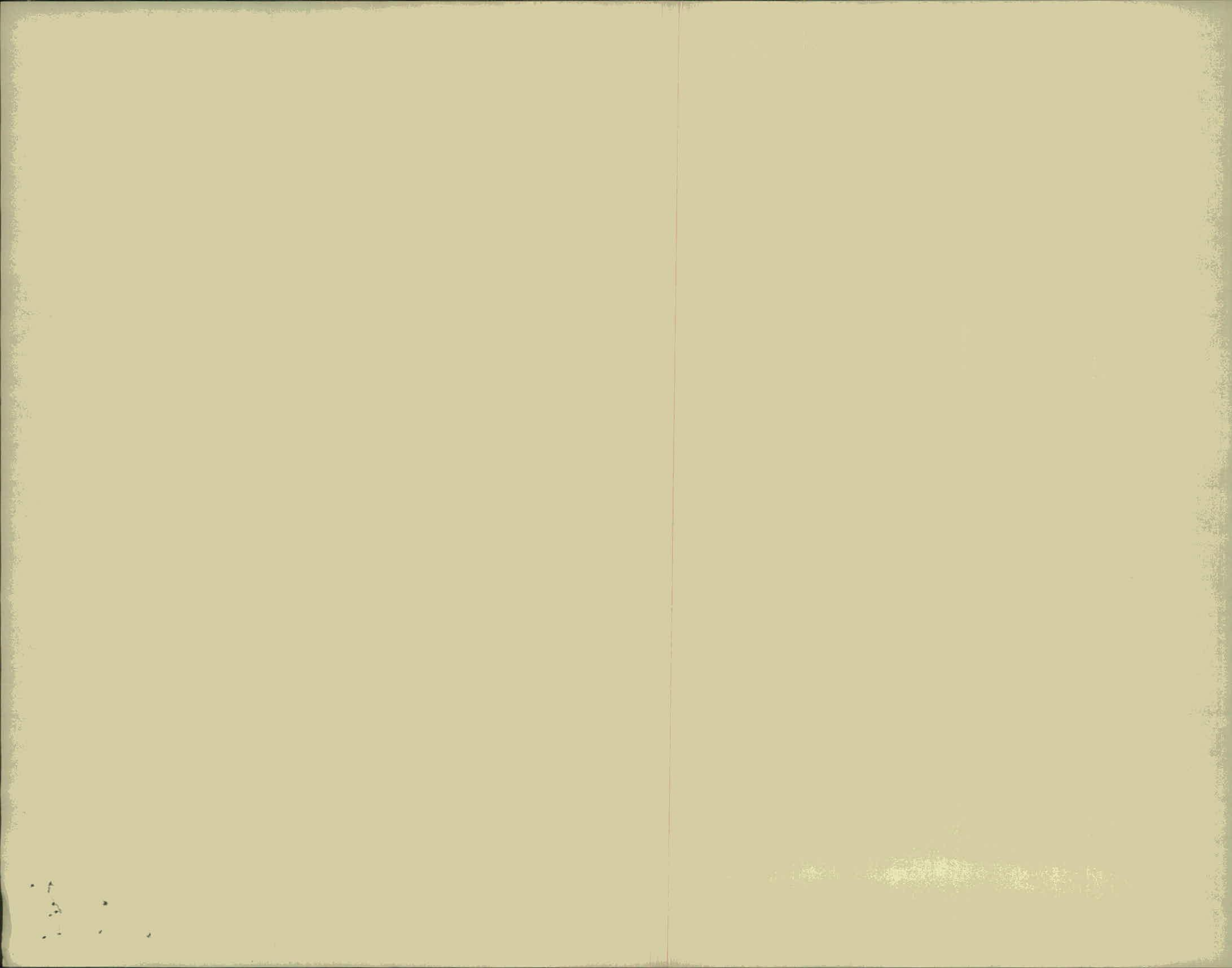
4) ALL DIMENSIONS ARE IN INCHES

5) TUBE MUST BE PICKLED OR ELECTROPOLISHED TO BE SMOOTH AND FREE FROM SCALE.
6) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

PRELIMINARY ISSUE

14/6/3

PA5	NEW ISSUE	CP	14.06.03
REV.	DESCRIPTION	BY	DATE
DESIGN	Ø	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	Ø		
CHECKED		DRAWING NO.	REV. PA5
MFG. APPR.		D6021	SHEET 1 OF 1
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE MATERIAL	NTS
DATE	14.06.03	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR TRANSMITTED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	





Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

OUTSTANDING PO REPRINT

Purchase Order ID PO24911

Purchase Order Date 7/8/2014
PO Print Date 4/28/2015

Page Number 1 of 2

Order From : VU-THI01
TUBE HOLLOWS INTERNATIONAL
39 ENTERPRISE DRIVE SUITE 2

WINDHAM, MAINE 04062
UNITED STATES

Ship To : DART AEROSPACE LTD
1270
ABERD
EEN
HAWKE
SBURY,
ON
K6A
1K7
CANAD
A

Contact Name		Buyer	Chantal Lavoie
Vendor Phone	207-892-8899	Customer POID	
Vendor Fax	207-892-8863	Customer Tax #	10127-2607
Ship To Contact		Terms	Net 30
Ship To Phone		Currency	USD
		FOB	EXW - (Ex Works)
Ship Method	Journey Freight collect		
Ship Acct			

Line Nbr	Item ID Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable	Req Qty	Extended Price
2	D6021-125P	Crosstube Material - 17-4PH	5/22/2015 Yes 5/22/2015	10.00 Each	\$23,062.50

Manufacture as per Drawing D6021 Rev.PA5
B127272

NOTE

Final delivery date may be pulled in as required. April delivery is latest ship date allowed as stated in proposal#14083.1

Line Total: \$23,062.50

3	71475-11	CRATE FOR SHIPMENTS	5/29/2015 Yes 5/29/2015	7.00 Each	\$1,225.00
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4/28/2015





Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

OUTSTANDING PO REPRINT

Purchase Order ID PO24911

Purchase Order Date 7/8/2014

PO Print Date 4/28/2015

Page Number 2 of 2

Order From : VU-THI01
TUBE HOLLOW INTERNATIONAL
39 ENTERPRISE DRIVE SUITE 2

WINDHAM, MAINE 04062
UNITED STATES

Ship To : DART AEROSPACE LTD
1270
ABERD
EEN
HAWKE
SBURY,
ON
K6A
1K7
CANAD
A

Contact Name		Buyer	Chantal Lavoie
Vendor Phone	207-892-8899	Customer POID	
Vendor Fax	207-892-8863	Customer Tax #	10127-2607
Ship To Contact		Terms	Net 30
Ship To Phone		Currency	USD
		FOB	EXW - (Ex Works)
Ship Method	Journey Freight collect		
Ship Acct			

Line Nbr	Item ID Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable	Req Qty	Extended Price
Line Total:					\$1,225.00
Outstanding PO Total:					\$24,287.50

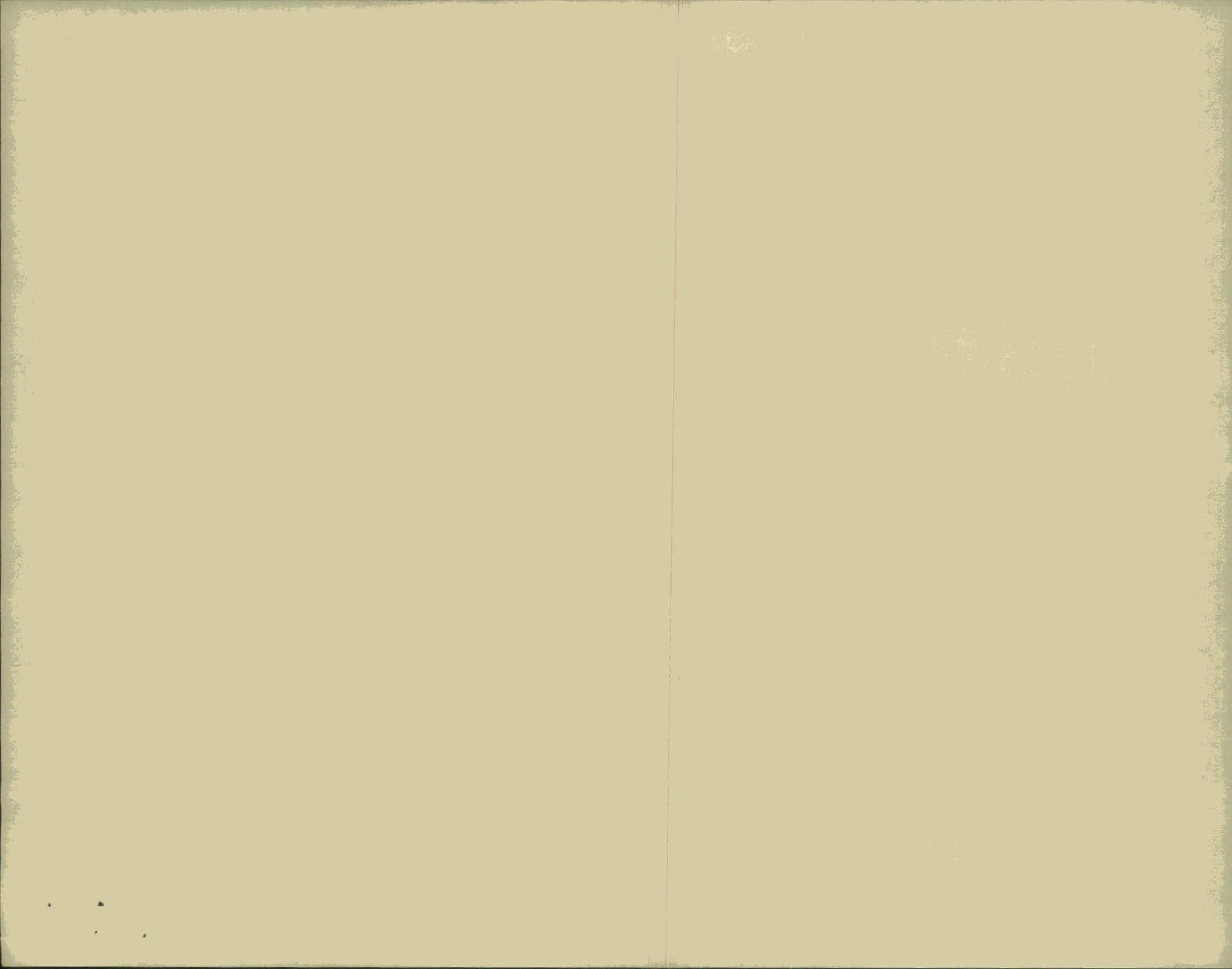
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Terms & Condition of
Purchasing(Suppliers) and
Procurement Quality Clauses are an
integral part of our AS9100

Change Nbr: 12

Change Date: 4/28/2015



STATEMENT OF CONFORMANCE

Dart Aerospace Ltd.
1270 Aberdeen
Hawkesbury, ON K6A 1K7

Part #: D6021-125P
Material: 17-4 PH
Report #: 5102870
Heat #: 265563
Drawing #: D6021 Rev. PA5
P.O #: PO24911 L/I 2
THI WO#: 141016/04
Qty: 16

SN: 32B, 32B2, 32C, 33B2, 33D2, 33E2, 33X, 34B, 34B2, 34C2, 34E2, 34N, 36B2, 36C, 36D, 36E2,

This is the balance of PO24911 L/I 2

8p15-04-27

The above-mentioned parts have been inspected and conform to customer contract, purchase order, drawing, and other required specifications. All exceptions are noted below. Inspection data and all certifications are kept on file and available for review upon customer request.

Comments: None

Inspected / Certified By:

Tom Bowker

Tom Bowker,

Quality Dept.

April 21, 2015

PACKING LIST



39 Enterprise Drive # 2 Windham, ME 04062
Phone 207.892.8899 Fax 207.892.8863

Packlist ID: 01323
Date: 4/21/2015
Page: 1

Sold To Address

DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY K6A 1K7
CANADA

Ship To Address

DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY K6A 1K7
CANADA

			CUSTOMER PO		PAYMENT TERMS		F.O.B.	
			24911		Net 30		WINDHAM	
SALES REP ID			SHIPPING METHOD		SHIP DATE		OUR ORDER NUMBER	
EVAN			CUSTOMER TRUCK		4/21/2015		DAR140195	
QUANTITY								
ORD	SHP	BCK	PART ID	DESCRIPTION				

56.00 16.00 0.00 D6021-125P

Sp1501-27

CROSSTUBE

Drawing:

Rev No.:

Unit of Measure: EA

Legacy Part No.:

16 PIECES OF THI SUPPLIED 17-4PH MATERIAL.

S/N(S): 32B, 32B2, 32C, 33B2, 33D2, 33E2, 33X, 34B, 34B2, 34C2, 34E2, 34N, 36B2, 36C, 36D, 36E2.

THIS IS THE BALANCE OF PO # 24911 L/I 2

RE: THI WO# 141016/04

THANK YOU FOR THIS ORDER.

SCANNED

RECEIVED BY: _____

**VALBRUNA**SLATER STAINLESS, INC.
2400 TAYLOR STREET WEST - PO BOX 630
FORT WAYNE IN 46802 USA
PHONE 260.434.2800 - FAX 260.434.2801**Product Certification Report**Report Number: **5102870**

Certified on Jan 27, 2015 Page 1 of 2

Order I.D. 1402065 001		Order Date 7/31/14		Commodity Code	
Dim 1 2.5000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 265563	Customer I.D. 001417	Customer Purchase Order P011200
Product Shape Rounds			Product Surface HR & Rough Turned		Customer Grade 17-4
Length (Inches) 132.000 Min. 156.000 Max.			Bill of Lading # 424094	Weight	

Ship To

Attention: Penn Stainless Prod
Tube Hollows International
39 Enterprise Dr.
Suite 2
Windham, ME 04062

Sold To

VALBRUNA STAINLESS, INC.
2400 TAYLOR STREET WEST
FORT WAYNE, IN 46802

Lifts: 0019 0055**Condition H-1025****ASTMA 564-13****MS-17-4H1025****CHEMICAL ANALYSIS**

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.039	.51	.026	.025	.42	15.70	4.36	.23	3.21	.03	.28	.001	.281

ROCKWELL HARDNESS ASTM E18-14

HRC

36.0

TENSILE PROPERTIES ASTM E8-13a

TS (PSI)	.2%YS (PSI)	%EL(2")	%RA
166900	160300	17.6	61.1

CHARPY V NOTCH E23-12c

TEMP	FT/LB	FT/LB	FT/LB	LAT EX	LAT EX	LAT EX	AVG FT LB	AVG LAT EX
70	45	47	41	25	23	26	44	24

TEST(F)

70

MAGNETIC PARTICLE TEST AMS2303

FREQ SEV

AVG .00 .00

PRODUCTION HEAT TREATMENT

SOL-ANN(F)	SOL-ANN(HR)	QUENCH	AGE(F)	AGE(HR)	QUENCH
1900	6.00	Air	1025	4	Air

MACRO ASTM E340-13/E381-01

MACRO

OK

OK

OK

PERCENT FERRITE (AMS 2315)

% FERRITE Etchant Magnification X

AVG .1 Marbles 100

ULTRASONIC TEST (ASTM A388)

OK

Free of mercury and low melting alloy contamination.
No welding or weld repair done.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes. Including Federal law Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

email: DHackett@valbruna.us

Dennis Hackett



**VALBRUNA****SLATER STAINLESS, INC.**2400 TAYLOR STREET WEST - PO BOX 630
FORT WAYNE IN 46802 USA
PHONE 260.434.2600 - FAX 260.434.2801**Product Certification Report**Report Number: **5102870**

Certified on Jan 27, 2015 Page 2 of 2

Order I.D. 1402065 001		Order Date 7/31/14		Commodity Code	
Dim 1 2.5000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 265563	Customer I.D. 001417	Customer Purchase Order P011200
Product Shape Rounds			Product Surface HR & Rough Turned		Customer Grade 17-4
Length (Inches) 132.000 Min. 156.000 Max.			Bill of Lading # 424094	Weight	

**Ship
To****Attention: Penn Stainless Prod
Tube Hollows International
39 Enterprise Dr.
Suite 2
Windham, ME 04062****Sold
To****VALBRUNA STAINLESS, INC.
2400 TAYLOR STREET WEST
FORT WAYNE, IN 46802**

Tensile specimen size .505".

Reduction ratio exceeds 5 To 1.

Specimen tested at longitudinal, mid-radius, room temperature.

Ultrasonic tested to ASTM A388 - Satisfactory.

Melted in Italy per DFARS clause 225.872-1.

Chemical testing to one or more of the listed ASTM methods:

E415-14, E1019-11, E1086-14.

Location of tensile fracture: inside middle of gage length.

Chemical Analysis performed at Acciaierie Valbruna, Italy.

No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications and is DFARS compliant.

Quality system is compliant with ISO 9001:2008. Produced in accordance with EN 10204 3.1.

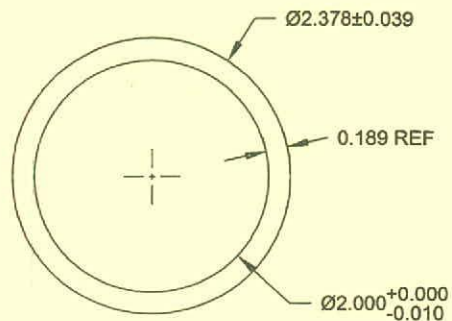
Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes. Including Federal law Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

email: DHackett@valbruna.us

Dennis Hackett

SPECIFICATION CONTROL DRAWING



NOTES

1) D6021-XXX CROSSTUBE

LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 125" LONG TUBE: D6021-125

2) MATERIAL: 17-4PH SEAMLESS STAINLESS STEEL TUBE PER ASTM A564
 $\text{Ø}2.378$ O.D. x $\text{Ø}2.000$ I.D.

HEAT TREAT TO H1025 (HRc 34-42):
MIN. ULTIMATE TENSILE STRENGTH = 155 ksi
MIN. YIELD TENSILE STRENGTH = 145 ksi

3) TOLERANCES ARE AS FOLLOWS:

ECCENTRICITY: 10% (+/-0.018" WALL)
LENGTH: XXX +0.500"/-0.000"
STRAIGHTNESS: 0.012" DEVIATION / 12" LENGTH

4) ALL DIMENSIONS ARE IN INCHES

5) TUBE MUST BE PICKLED OR ELECTROPOLISHED TO BE SMOOTH AND FREE FROM SCALE.
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RELEASE

2015 MAR 18

47 ECH 15-547

REV.	NEW ISSUE	DESCRIPTION	CP	15.01.20
DESIGN			BY	DATE
DRAWN				
CHECKED				
MFG. APPR.				
APPROVED				
DE APPR.				
DATE	15.01.20			

DART AEROSPACE LTD	
HAWKESBURY, ONTARIO, CANADA	
DRAWING NO.	REV. A
D6021	SHEET 1 OF 1
TITLE	SCALE
CROSSTUBE MATERIAL	NTS

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